Amendment of the Claims

This listing of the claims will replace all prior versions and listing of claims in the application.

Listing of Claims

1.   (Currently Amended) An apparatus comprising

a cylinder having opposed ends;

a piston disposed for reciprocating movement between the opposed ends of the cylinder; drive means connected to the piston for providing the reciprocating movement of the piston;

sensor means in communication with said cylinder for sensing any contact of said piston and said opposed ends, and generating a contact signal representing said contact; and

control means interconnecting said sensor means and said drive means, the control means adapted to receive said contact signal as a sole input signal and generate a control signal to said drive means to adjust reciprocating movement of the piston, wherein the sensor means, drive means and control means are connected in series.

2.   (Cancelled)

3.   (Currently Amended) The apparatus according to claim 2 1, wherein the drive means, the sensor means and the control means comprise:

a closed loop control system

4.   (Original) The apparatus according to claim 1, wherein the drive means is

selected from the group consisting of a variable voltage drive and a current driver.

5.   (Original) The apparatus according to claim 1, wherein said sensor means is

mounted to an exterior of said cylinder.

6.   (Original) The apparatus according to claim 1, wherein the sensor means,

comprises:

        a piezoelectric device.

7.   (Original) The apparatus according to claim 1, wherein the apparatus is a vacuum

pump.

8.   (Currently Amended) A system for controlling a reciprocating apparatus having a

cylinder, a piston adapted for reciprocating movement in the cylinder, and a driver for

moving the piston, the system comprising-:

        sensor means mounted to said cylinder for generating a first signal representing

        contact between the piston and the cylinder: and

        control means interconnecting said sensor means and the driver, the control means

        responsive to the first signal to generate a second signal to the driver from said

        first signal as a sole input signal to control movement of the driver and the piston.